

# CHELMSFORD AMATEUR RADIO SOCIETY

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## NEXT MEETING - ANTARTIC SURVEY

Our September lecture is one of the series in the 'general interest' category. We are pleased to welcome Mr B. J. Peters, who is a member of the British Antarctic Survey and has recently returned from a tour of duty. Even in these modern times this part of the world is still a challenge to explorers and because of its comparative freedom from pollution is regarded as one of the few remaining areas for studying the true environment.

Barry will be illustrating his talk on the work of the British Antarctic Survey with slides and we look forward to an interesting evening, starting at 7.30pm on Tuesday 2nd, at the Marconi College, Arbour Lane, Chelmsford.

## DATES FOR YOUR DIARY

- 2 September - Antarctic Survey.
  - 7 September - Vange A.R.S. Rally.
  - 21 September - Harlow Mobile Rally.
  - 7 October - A.G.M. and Test your Rig.
  - 4 November - Junk sale.
  - 2 December - R.D.F. to Radar.
- More dates in DF NEWS.

## LAST MEETING - SOLAR CYCLE 21 - Gwyn 84FKH

Our Chairman, Dick 63MHR started the evening in fine style by giving us all a resume on 'The Sun'.

The sun gives off a lot of energy, it's the Electromagnetic radiation and Particle radiation that have the most effect upon Amateurs. The fore because of D, E and F layer ionisation, the latter as it assists with the V.H.F. phenomena 'Aurora's'. The sun unlike the earth has a 27 day rotation period which carries a title 'Charrington Rotation Number'. Sunspots; events on the surface are counted daily, Zurich issue smoothed figures weekly and can range from about 5 to 120. A 0 count is common at this period of the Solar Cycle. Solar Cycles have been recorded in Europe officially since 1750. The present cycle (11 years in length). No.22 has only just started.

Some phenomena notes:-

Geomagnetic 'A' Index - is a 24 hour averaged index. 0-10 quiet, 10-20 unsettled, 20-50 sub-storm. 50-80 storm and 80-100 severe storm (watch out).

Solar Flux - is a measure of radio noise at 2800MHz, measured in Canada daily at 1700 GMT. It varies between about 70 and 200.

Best H.F. conditions would have a low A index with a high S.F.

Coronal Holes - are areas of Helium on the sun's surface measured/recorded in the U.S.A. and are responsible for the big auroral events.

Critical Frequency - is the highest frequency that reflects a signal off the ionosphere back to the transmitter.

Solar flares - C, M and X. C flares are the most common and low in intensity. They give the general background to the S.F. M type are of increased intensity and are sub-classed M1 to M4 (sounds like motorways). They can cause earth events such as magnetic storms. M3-M4 usually give Scottish type weak auroral events. X type are violent, big and accompanied by X-ray type emissions. They can cause widespread blackouts of the H.F. spectrum. These events whilst very big, the largest known X15, recorded 11th July 1978, did not produce an aurora.

Maunder-Minima - a period roughly between 1645-1715 which produced very little or no sunspot activity.

Charlie Newton's lecture began with him explaining the start of Solar Cycle phenomenon watching. Telescopes were the first instruments used to record Solar events; amount of spots, varying sizes etc. There are a number of, recordable phenomena on the solar disk and it was decided that sunspots would be the event recorded. A graph showing variations over a long period was shown, it was a simple job to pick out the maxima and minima periods. The same data monthly or daily showed more pronounced spikes. Therefore it can be deduced that sunspot numbers vary daily.

The sun's magnetic field at our starting point has a field similar to that of earth's. However, the sun is gaseous with

the equator rotating faster than the extremes, causing a differential rotation. The core is stationary with a very quick surface giving the 27 days rotation. The strong magnetic field is stretched and gets wound around itself. Because of the differential rotation the sun's material gets tangled like rope squeezing out material between the lines of force. As the material breaks the surface it forms sunspots. Northern spots are negative whilst southern spots are positive. Activity is bi-polar, a leading negative spot in the northern hemisphere is followed by a positive spot, the opposite being true for the southern hemisphere. At the end of the Solar Cycle remnants that were trapped break off, positive remnants are attracted to the negative pole and visa versa. Slowly the remnants build-up and also slowly the polarity reverses. Charlie states that here is the true cycle which of course takes 22 years.

At the beginning of a cycle, spots appear around the 40 degree latitude area, progressing to about 25 degrees during a maxima time and finally near the equator at the end of a cycle. Cycles vary in magnitude also in phases as it progresses. The magnetic phase produces big aurora's, the post phase produces very big aurora's. The VHF/UHF people can look forward to events as the cycle progresses. At the start of cycle 21, 12 sunspots were recorded while in September 1979, 188.4 sunspots were recorded. It was noted that modern cycles appear bigger, but there may be other reasons for this information. Finally there appear very large magnetic storms near the sunspot minima, causing large auroral events, such as happened early 1986. There also would appear to be evidence of large magnetic disturbances during equinox's.

Satellites have re-shaped the thinking about the sun with the wealth of information they obtain. For instance during the maxima period a S.F. of 321 was recorded with a very small A index, producing very good H.F. conditions. After the 1979 peak the A index grew and the S.F. decreased, giving maximum magnetic storms. NOAA 6 satellite was used to monitor the sun's power input which surpassed everyone's expectations, sending recording instruments readings off their scales. The figure of 32 gigawatts (amount of power used in the U.S.A. each day), was given as a yardstick. Power ratings of 350 gigawatts were recorded in September 1982 which gives an idea of the input power from the sun.

M.U.F.'s rise to 45/50 MHz during the maxima periods but as the cycle progresses the dips get bigger to below 9MHz. F2 critical frequencies in 1982 dropped from 12MHz to 7MHz, recovering to 9MHz. The F2 critical frequencies lower and the early morning lows rise giving us less and less spectrum as the cycle nears its end. Recorded figures show an increase in sunspot activity at cycle low times with a maximum in 1976, the highest for 250 years, 105 spotless days were recorded. Cycle 21 was running at a 70 spotless day level. Cycles historically have lasted between 7 and 15 years and are therefore not very good clocks. Amplitudes also vary wildly, with a factor of 3 since 1930.

The lecture concluded with speculation of another Maunder Minimum, or as Charlie suggested (and is quite correct) a new cycle would not be far away. Of course if the gloom mongers were correct we could see an end to our hobby, but of course they are not and I for one look forward to the coming sunspot maxima.

A letter of thanks has been sent to Charlie for a most enlightening, informative and pleasant lecture.

The Jackpot Raffle, drawn by Roy 63PMX! was won by Ela 66HKM.... well done Ela but no other comments please!

## R.S.G.B. BUREAU

Throughput of QSL cards resumes in September, so now is the time to get yours packaged up ready for posting.

## SPECIAL EVENT STATION GB4NSC

The QSL cards for this event have been printed and shortly will be winging their way through the Bureau to all the stations contacted. A sample can be seen on the notice-board at the next meeting.

## COMMITTEE MEETING

The September Committee Meeting will be held in the Marconi College Residence at 7:30pm on Wednesday, 10th September. You are most welcome to join us.

## DF NEWS - Dick G3MHR.

The fourth Chelmsford event took place on 18 July when G4JJH/P was the hidden station.

On the previous Colchester event Mike Hawkins' bearings crossed in the centre of Witham; this time everyone's bearings crossed near the town centre.

Jeff and Richard DeLaRue had found a site between the railway and the river with plenty of cover and mosquitos.

All teams rapidly converged on the site and began beating the undergrowth. Some found an aerial and followed it - only to find a DF receiver at the end!

Finally it became a race to find the transmitter before the operators developed severe anaemia.

## RESULTS

1 Ian Butson	8.02	7 Frank Pearson	8.18
2 Peter Larbalestier	8.06	8 Dick Brooks	8.22
3 Mike Hawkins	8.08	9 Alan Williams	8.23
4 Pat Cranmer	8.09	10 Colin Baisden	8.25
5 Andrew Mead	8.14	11 Mike Farmer	8.29
6 Roy Emeny	8.17		

Congratulations to Ian Butson and Bill Pechey, who both qualified for the National Final on a very wet Mid-Thames Event.

## THIS MONTHS EVENTS

- 29 August Colchester
- 7 September RSGB Qualifying Event Slade
- 12 September Chelmsford

## JAS-1 (JAPANESE AMATEUR SATELLITE)

We are pleased to report the successful all-Japanese launch of the latest Amateur Radio Satellite JAS-1 on Tuesday 12th August. Ela and I spent a most interesting evening monitoring and recording the progress of the lift-off and first orbit. Starting with the AMSAT Net on 3.78MHz we learned that a 'live' transmission was on 14.292MHz, beamed to Europe by W0RPF, the AMSAT Launch Information Network Service. This proved to be a very good relay of a 'conference' telephone link between the launch site, a monitoring station in Chile and the back-up command station at the University of Surrey.

We obtained a very clear tape recording throughout the 90 minutes of the lift-off and separation culminating in direct reception of the satellite telemetry signal on 435.795MHz as it passed over the UK for the first time.

When time permits we hope to abridge this recording and replay it at a club meeting at a later date.

Subsequently we have heard many stations in the USA and Europe using the linear transponder, the signals are very clear compared with OSCAR-10 but suffer severe tone shift from the rapid doppler effect characteristic of low orbiting spacecraft.

## MEMBERS ADVERTISEMENTS

### FOR SALE

Monochrome Monitor, 12 inch, Composite video input, OK for 80 column text. £15  
Heathkit Oscilloscope 10-120, good working condition. £15

### WANTED

General purpose Oscilloscope - preferably double-beam and bandwidth to 20MHz.  
H.F. Signal Generator, 1 to 30MHz.

## LETTERS TO THE EDITOR

I am pleased to report that another batch of letters have been received for publication.... keep them coming!

Dear Editor,

I am writing to comment on a situation that I find most frustrating when listening on the VHF/UHF bands. I often hear stations calling "CQ DX" and say they are beaming "South" or "North" etc., however, they omit to give their location. Little wonder that they get upset when I reply, only to find that they are in the next street and we are working off the back of their antenna!

How much easier it would be if they put in their location e.g. "this is G1ZZZ calling CQ DX beaming North from Chelmsford Essex".

David Drizen, G8UUO.

Dear Editor,

Declining Standards..... After many years of useful service the standard frequency H.F. transmitters of MSF will be switched off for the last time. The services on 2.5, 5.0 and 10.0 MHz will cease on February 29th 1988. The 60 KHz service carrying time-code data will continue to operate.

Bill Cole, G4JUM.

Dear Editor,

May I, through the Newsletter, appeal for information in order to assist students in a Morse Class? I am looking for an inexpensive way of using a "QWERTY" keyboard to produce Morse equivalents to letters and figures (and, possibly CT, AR etc) in 'oscillator-type' audio.

May I also commend Brian G3CVI for his interesting letter and hope that some, at least, of his problems have now been solved to his satisfaction.

Would a "Snags I have known" session interest the members, I wonder? I for one would like to benefit from the experience of the more knowledgeable members. Who knows - I might be able to stop DA denying me the use of FM through my 2m transverter?

Eric McPherson, G4WMT.

*It's an unfortunate fact that stations living in immediate proximity to Police Headquarters at Springfield experience receiver problems caused by their link transmitters just above our 2 metre band. Any one of these strong carriers will inject an extra 'local oscillator' into your first mixer and produce an unwanted IF which masks GB3DA (and other nearby signals) appear at unexpected points on your dial! -Ed.*

## ANNUAL SOCIAL

Now is the time the committee start planning our Social Event.

The last gathering was 'ready made' with the Presidential Installation, however, this year we must make our own arrangements. We propose to hold the Social on a Saturday in mid January. If you are interested, please inform a member of the committee so that we can make a firm booking.

## CLUB NET

By request, the starting time of the 2 metre FM net has been changed from 7.15pm to 8.00pm, local time, to suit the domestic arrangements of a number of the participants. In addition, an alternative frequency of 145.225MHz has been proposed if the regular 145.275MHz is already occupied. Please join us for the regular exchange of information on the Tuesdays between the club meetings.

73 from Roy & Ela, G3PMX & G6HKM

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